

Colonial National Monument Parkway,
Williamsburg Tunnel
0.3 miles south of C & O Railroad Underpass
Williamsburg City
Virginia

HAER No. VA-48-D

HAER
VA,
100-YORK,
13-D-

PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, DC 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD

COLONIAL NATIONAL MONUMENT PARKWAY:
WILLIAMSBURG TUNNEL

HAER No. VA-48-D

HAER

VA

100-YORK,

18-D

Location: The Williamsburg Tunnel's north portal lies 0.3 miles south of the C & O Railroad Underpass while the south tunnel portal is 0.3 miles north of the intersection of the parkway and Newport Avenue, Williamsburg City, Virginia.

UTM: 18.349300.4126280 (North Portal)
18.349140.4125950 (South Portal)
Quad: Williamsburg

Date of Construction: March, 1940-May, 1949. Lighting system altered 1975.

Builder: J.G. Attaway Construction Company
Statesboro, Georgia

Present Owner: Mid-Atlantic Region
National Park Service
U.S. Department of the Interior
Customs House
Second and Chestnut Streets
Philadelphia, Pennsylvania 19106

Present Use: Vehicular tunnel

Significance: Built using the cut-and-cover method, the Williamsburg Tunnel journeyed through the heart of the restoration of Colonial Williamsburg. Although the builder's inexperience caused numerous delays and problems during construction, the contractor did employ steel forms for molding the concrete that could be dismantled and reassembled quickly. The hardened concrete also required little additional smoothing. The tunnel's portals used stylistic elements of colonial architecture such as arches and Flemish bond brickwork while also reflecting the designers' effort to have the structures complement the natural environment of the Tidewater area through their subdued exterior decorations and color as well as their relatively short physical dimensions.

Historian: Joseph P. Meko, 1988

Although no documentation exists regarding who first made the proposal,¹ the idea for a tunnel through Williamsburg had taken hold by early 1936. Charles E. Peterson, the chief of the Eastern Division of the National Park Service's Branch of Plans and Design, sketched a preliminary study of one of the tunnel's portals.² This drawing combined features from Peterson's previous designs for the Capitol Landing and C & O Railroad underpasses on the Colonial Parkway.³ As with these two parkway bridges, Peterson's portal had parapets, a keystone that extended above the arch ring, and sloped soil along the spandrel walls. The portal resembled the Capitol Landing Underpass in that it contained a single arch spanning the parkway as well as brick retaining walls extending outward along the road. The C & O Railroad Underpass provided the source for the portal's accentuated piers and decorative rondelles. Despite these similarities, Peterson's proposed tunnel entrance nevertheless differed significantly from the two underpasses. While the parkway bridges had flared ends on their parapets, the top of the tunnel portal had squared corners. These portal corners stood above the soil line, unlike the underpasses' parapet ends which met the soil line. The raised squared corners of the portal highlighted the entire structure, accentuating its appearance in its natural surroundings.

By July, 1939, engineers for the Public Roads Administration had surveyed and mapped the route of the tunnel through Williamsburg.⁴ At that time, North England Street marked the Williamsburg terminus of the Colonial Parkway. With a portal-to-portal length of 1183 feet, the Williamsburg Tunnel ran under, in order from north to south, Nicholson, Duke of Gloucester, England, and Francis Streets. This tunnel route passed the Randolph House, travelled between the Powder Horn and the Court House, and nipped the southwest corner of the Dovell House near Williamsburg's City Hall, "all of these buildings having great historical value."⁵ The plan called for 100-foot easements for the tunnel, the center fifty feet delimited the tunnel's concrete linings. The National Park Service made their formal proposal for the tunnel to the Williamsburg City Council on August 11, 1939. Williamsburg Restoration, Inc., represented by its vice-president Vernon V. Geddy, favored the tunnel because, in spite of the inconveniences that would occur during its

¹ Haskett, 1985, 3.

² Peterson 1936. See Supplemental Information, page 9.

³ For information on the Capitol Landing and the C & O Railroad underpasses, see the Historic American Engineering Record documentation reports HAER Nos. VA-48-B and VA-48-C respectively.

⁴ Public Roads Administration 1939a. The Public Roads Administration of the Federal Works Agency assumed the functions of the Department of Agriculture's Bureau of Public Roads.

⁵ Smith 1943, 7-8.

construction, the tunnel provided the only alternative that would reduce and possibly eliminate automobile traffic in the restored colonial town yet provide tourists with a route that did not bypass Williamsburg.⁶ After studying the proposal, the Williamsburg City Council gave the tunnel its approval on September 23, 1939.⁷

Earlier in September, 1939, the National Park Service's Eastern Division of Plans and Designs had made drawings for the tunnel portals. Their first effort at the beginning of the month⁸ had both the north and south portals' maximum arch height at seventeen feet eighteen and one-half inches. Composed of selected red ground and rubbed brick, the arch rings measured two and one-half feet in width and rested on six-foot wide rectangular brick bases at their springing points. The keystones had a two-foot base and extended above the arch rings to the bottoms of the parapets. The arches themselves spanned thirty feet, twenty-five feet for the roadway and five feet for two sidewalks. The portals' parapets measured ninety feet in length, three feet in height, and thirteen inches in thickness. The center forty-two feet of the parapets had no curvature; the twenty-four feet on either side of the center curved a distance of five and one-half feet to the parapets' flared ends. The soil sloped against the Flemish bond exteriors of the portals in a 3:2 ratio. The south portal differed from its northern counterpart in that it had a curved left and a squared right parapet while the north portal had both its parapets curved.

Subsequent alterations to this original conception of the tunnel portals occurred as the month of September progressed. Toe walls extending outward from the portals along the parkway had been added. Two levels of molded brick coping connected by a curve topped these retaining walls.⁹ The south portal had been extended to ninety-four feet in length. Retaining walls one foot two inches thick followed the sides of the parkway for forty-seven feet. An eight and one-half foot brick sidewalk done in a herringbone pattern accompanied the retaining walls for the first fifteen feet out from the portal. The arch maintained its thirty-foot span but its ring shrank to a width of two feet seven and three-fourths inches while its height had increased to seventeen feet ten inches and its keystone had acquired brick facing. Oversized handmade brick comprised the Flemish bond portal exterior and the English bond arch bases. At the other entrance to the concrete tunnel vault, the north portal's facade appeared the same as its southern counterpart except that the curved parapet measured only seventy-eight feet in length and the arch ring

⁶ "Williamsburg Tunnel Urged for Parkway" 1939; "Restoration Favors Tunnel, Geddy Informs Council" 1939.

⁷ "Approval Given Tunnel Project by City Council" 1939.

⁸ Eastern Division 1939a.

⁹ Eastern Division 1939b.

had a width of two feet seven inches. The longer retaining walls for the approach to the northern portal had a length of eighty-nine feet.¹⁰

On November 8, 1939, the Public Roads Administration of the Federal Works Agency advertised Colonial Parkway Project 1-D-3, "the construction of a reinforced concrete tunnel, by the cut-and-cover method, the construction of brick faced portals, and other work."¹¹ Provisions in the tunnel construction plans had been made for future lighting, ventilation, traffic control, and carbon monoxide detection systems.¹² The twenty-five foot wide parkway had concrete pavement six inches thick and two sidewalks each having a width of two and one-half feet. The radius of the concrete vault's interior surface measured fifteen feet while the radius to the vault's exterior surface reached seventeen feet seven inches. The thickness of the vault varied from one foot at its top to two feet six inches at its springing points to three feet at its base. Seventeen feet ten inches constituted the vault's maximum height above the roadway; the tunnel's maximum width measured forty-three feet six inches. Three lights, one at the top of the vault and the others six feet on either side of the top light, comprised the basic component of an illumination system that ran the entire length of the tunnel.¹³ The J.G. Attaway Construction Company of Statesboro, Georgia, having submitted the low bid of \$285,705.75, received the contract for the Williamsburg Tunnel on January 11, 1940. The initial construction contract time of 375 days began on March 26, 1940.¹⁴

Despite the March authorization to proceed, Attaway did not begin work until the middle of April. Civilian Conservation Corps (CCC) personnel stripped soil at the portal sites.¹⁵ Attaway's slow construction progress did nothing to improve his already tarnished reputation. Public Roads Administration highway engineer William Smith observed that Attaway "was slow and vacillating in his approach to, and execution of, the problems confronting him and soon demonstrated his lack of experience and organization and the insufficiency of equipment to vigorously and properly execute the work involved in his contract." Attaway compounded his problems by subcontracting the grading and excavation work to the firm of I.J. Foster of Statesboro,

¹⁰ Eastern Division 1939c, 1939d.

¹¹ Public Roads Administration 1939b. The "cut-and-cover method" for tunnel construction starts with the excavation of a trench, continues with the construction of the tunnel lining, and concludes with the covering of the tunnel.

¹² Cox 1941a, 1.

¹³ Public Roads Administration 1939c.

¹⁴ Smith 1943, 9.

¹⁵ Cox, "Superintendent's Monthly Narrative Report" (April, 1940), 3. The park superintendent filed his monthly report (hereafter abbreviated "SMNR") during the month following the month stated in the title.

Georgia, a move that "further complicated matters and proved detrimental to efficient work and progress throughout the job."¹⁶ Although weather conditions improved over the next several months, July saw the emergence of a new kind of problem that would plague the tunnel's construction for months: landslides. On July 15 and July 31, inadequate shoring at the Dovell office building resulted in cave-ins that caused the structure's south brick wall to collapse. On August 8, the western half of the Dovell building was razed.¹⁷ Another landslide on August 29 caught six workmen by surprise but none received any serious injuries.¹⁸

Attaway began constructing the tunnel at the south portal and worked his way north. September 6 saw the pouring of the first thirty-foot reinforced concrete section of the tunnel vault; by the end of the month, 150 feet of the vault had been set in place. Brickwork on the south portal had made considerable progress, reaching the bottom of the parapet.¹⁹ In constructing the tunnel vault sections, Attaway partially redeemed himself by using steel forms for the concrete. These forms could be "quickly erected, dismantled and reset up No additional finish of the tunnel face of the concrete was necessary as the metal plates left a very smooth and dense surface and the outline of the individual plates left a pleasing pattern of squares in appearance."²⁰ Once a tunnel vault section had hardened and been waterproofed, backfilling the section commenced. Progress slowed during the next several months as the tunnel vault approached Francis and Duke of Gloucester Streets in the Williamsburg restoration area. Given his earlier experiences at the Dovell office building, Attaway placed extra shoring and bracing at both the Court House and the Powder Horn. At the end of 1940, thirteen thirty-foot sections of the tunnel vault had been poured. In contrast to this slow progress on the tunnel proper, brickwork on the south portal needed only the coping to achieve completion.²¹

The slow progress of tunnel construction during 1940 and all its associated inconveniences had not endeared Attaway nor the National Park Service to the residents of Williamsburg. At the start of 1941, the tunnel had become

¹⁶ Smith 1943, 10. Cox 1941a, 1, refers to the subcontracting firm cited in the narrative; Smith, however, denotes the subcontractor as R.G. Foster of Decatur, Georgia.

¹⁷ Cox "SMNR" (July, 1940), 3; "Dovell Building Near Tunnel Cut Partially Razed" 1940.

¹⁸ "Sixth Cavein on Parkway Job at Williamsburg Injures Six" 1940.

¹⁹ Cox "SMNR" (September, 1940), 3.

²⁰ Smith 1943, 12.

²¹ Cox "SMNR" (November, 1940), 4; "SMNR" (December, 1940), 3.

the most unwanted child in these parts. The city apparently didn't want it; the people are sure they didn't want it; and even the Restoration officials appear lukewarm about the project.... There's only one good thing the majority of the townspeople see about the project they've come to call 'Ickes Folly'--it might make a good air raid shelter--if it's finished in time.²²

Despite good weather during the first four months of 1941, the tunnel continued to advance at a snail's pace. Another landslide on March 21 broke the main sewer that served the eastern half of Williamsburg.²³ The contractor's unsatisfactory progress and the frequent mishaps suggested to Park Superintendent Cox that the tunnel might cause adverse publicity for the entire park. In spite of his antipathy toward the contractor, Cox believed that Attaway must be allowed to complete the job.²⁴

Attaway's work on the tunnel advanced erratically over the next six months. Nevertheless, thirty-three of the thirty-nine concrete arch sections and ninety-five percent of the excavation had been completed by October. December, 1941 saw the pouring of the final section of the tunnel vault and the backfilling had progressed to within fifty feet of the north portal.²⁵ The laying of a sewer between Francis and Duke of Gloucester Streets, backfilling and soil replacement at the remaining exposed tunnel sections, and the beginning of the construction of the north portal occupied Attaway during the first three months of 1942. Brickwork on the north portal and the construction of its retaining walls reached completion in June.²⁶ After the final finishing of the tunnel's interior, Park Superintendent Harrington accepted the tunnel on October 1, 1942.²⁷ Attaway used 678 contract days to complete the tunnel and actually finished the entire project under budget, the

²² Velz 1941. Harold Ickes held the post of Secretary of the Interior at this time.

²³ "Slide Tumbles Earth in Cut" 1941.

²⁴ Cox 1941b. In this memorandum to the Director of the National Park Service, Cox noted "The reaction to the tunnel is so generally adverse that I have felt it may easily have an undesirable effect on other phases of National Park Service activities in this section. When people find fault with one thing they are so prone to condemn other projects regardless of their merit."

²⁵ Cox "SMNR" (October, 1941), 6; "SMNR" (December, 1941), 5.

²⁶ Cox "SMNR" (March, 1942), 4; "SMNR" (June, 1942), 3.

²⁷ Harrington "SMNR" (September, 1942), 3. J.C. Harrington replaced Elbert Cox as park superintendent in August, 1942. Harrington remained in office until June, 1946.

final amount of the contract being \$276,611.56.²⁸ Nevertheless, Attaway's slow construction of the tunnel highlighted Public Roads Administration district engineer H.J. Spelman's summation of Project 1-D-3:

It is realized that the contractor has been unnecessarily slow in the conduct of this work, and that he was not well qualified by experience, equipment, organization or financial standing for a project of this character and magnitude. It is also realized that the result of all this has been a considerable inconvenience to the people of Williamsburg.²⁹

Although the tunnel proper had been completed and accepted in October, 1942, the grading of the roadway leading to the tunnel remained incomplete until May, 1943.³⁰ World War II halted further work on all Colonial Parkway construction projects; barricades blocked the portals until June, 1948, when work began on the tunnel's lighting system. With the completion of the lights and the grading of the roadway running through the concrete vaults, the Williamsburg Tunnel officially opened on May 10, 1949, after a brief ribbon-cutting ceremony involving Park Superintendent Edward Hummel and Williamsburg Mayor H.M. Stryker.³¹ The only significant subsequent alteration to the tunnel occurred in 1975. Project 1-D-30, awarded to M.C. Dean Electrical Contracting, Inc., of Fairfax, Virginia, for \$96,758.79, resulted in the installation of a new tunnel lighting system.

²⁸ Smith 1943, 6.

²⁹ Spelman 1942.

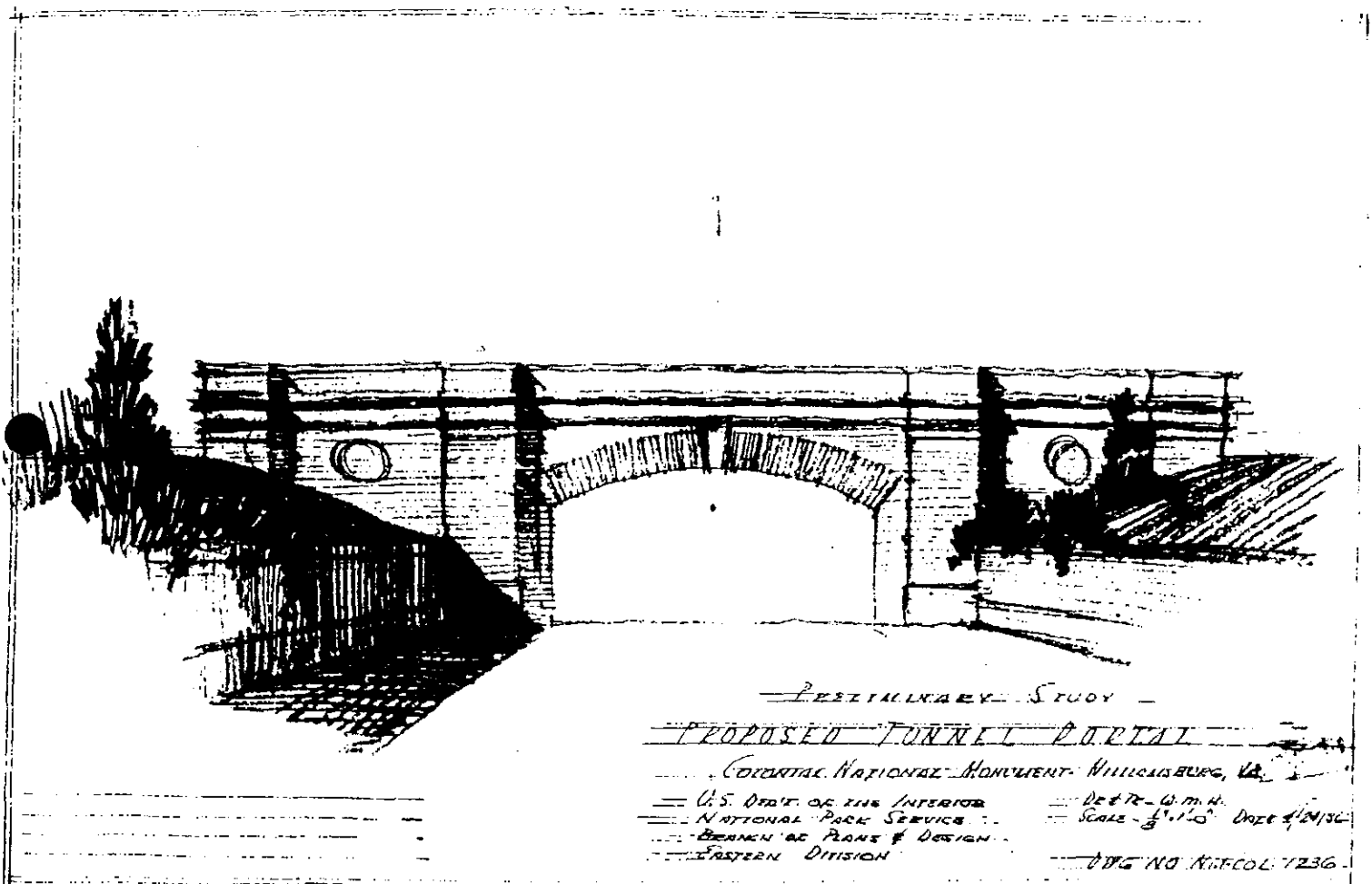
³⁰ Harrington, "SMNR" (May, 1943), 3.

³¹ Hummel "SMNR" (June, 1948), 2; "SMNR" (May, 1949), 1-2; "Williamsburg Tunnel Opened at Ceremony" 1949. Edward Hummel occupied the park superintendent's office from July, 1946, to July, 1952.

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Supplemental Information

1. Proposed Williamsburg Tunnel Portal: 1936.³²



Bibliography

Colonial National Historical Park is abbreviated CNHP. Entries labelled "Tunnel-General" and "Tunnel and Approaches" can be found respectively found in File No. 630-Parkway Williamsburg-Jamestown Williamsburg Tunnel-General and File No. 630-Parkway Williamsburg-Jamestown Williamsburg Tunnel and Approaches and Incidental Construction Project 1D3. These files are both located in the Colonial Parkway Original Construction Specification files, Engineer's Office, CNHP Maintenance Division, Yorktown.

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The park superintendent filed these reports during the month following the month stated in the title. Cox held the position of park superintendent from February, 1939, to June, 1942. Information on the tunnel can be found under the headings "150-Plans, Maps, and Surveys" and "220-New Construction." Beginning in April, 1941, the reports dropped the numerical headings. No information on the tunnel appears in these reports from 1944 to 1947. Citations in the narrative use the abbreviation "SMNR" and give the month being reviewed.

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- "Williamsburg Tunnel Urged for Parkway." 1939. Washington Evening Star, August 11, 1939, A-5.

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